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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



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Dinner's Over
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A SCIENCE SERVICE PUBLICATION



Adventurers in Research

Dr. W. E. Shoupp

SCIENTIST

After graduation from Miami University, Oxford, Ohio in 1931, he served as graduate assistant and instructor in physics at the University of Illinois where he received his degrees of Master of Arts in 1933, and Doctor of Philosophy in 1937. He joined Westinghouse in 1938 as a Research Fellow. In 1941, he became a research scientist in the Laboratory at East Pittsburgh and was made Manager of the Electronics Department at the Laboratory in 1943. Four years later, he was appointed Director of Research of the Westinghouse Atomic Power Division. He is now Director of Development of this Division.

At a meeting of scientists in 1938, several were discussing the use of nuclear energy as a possible source of large amounts of energy. Before the meeting was over, others joined in and the subject really became "hot". Among those engaging in the discussion was Dr. W. E. Shoupp, then a Research Fellow at the Westinghouse Research Laboratories.

Dr. Shoupp went back to the Laboratory, determined to find some answers to the subject. Making use of the new Westinghouse atom smasher, he and other nuclear scientists did some pioneering research, culminating in the discovery that a uranium atom could be split into two equal fragments by the impact of high-speed gamma rays, with commensurate release of large amounts of energy. This they called "photo-fission".

His work on the subject also included the determination of the amount of neutron energy required to cause uranium and thorium to fission. This contributed to the basic understanding of the nuclear fission process and to the development of the atomic bomb and atomic energy.

Incidentally, the Lamp Laboratory of Westinghouse supplied pure uranium for the first nuclear reactor.

At the beginning of World War II, when radar was being considered, Dr. Shoupp and some associates built from scratch, a radar laboratory where tubes and application techniques were developed. They made a major contribution to radar, and equally important, radar jamming.

Dr. Shoupp is continuing his work regarding atomic energy as Director of Development of the Westinghouse Atomic Power Division. Current research work under his supervision includes developments in connection with an atomic energy plant for the first atomic submarine and another plant suitable for the propulsion of large vessels such as aircraft carriers.

A man of engaging personality, Dr. Shoupp has a keen sense of humor and the ability to inspire and develop those who work with him. He is particularly proud of the fact that Westinghouse has been able to attract to the work of atomic power development, scientists of the highest caliber. Westinghouse Electric Corp., Pittsburgh, Penna.

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YOU CAN BE SURE...IF IT'S Westinghouse

MEDICINE

Potent Anti-Malaria Drug

Hope that malaria, the world's Number One disease, may be completely wiped out seen in development of the most powerful drug yet known, Daraprim.

See Front Cover

► AN ANTI-MALARIA drug more powerful than any yet known was reported by U.S. Public Health Service scientists at the meeting of the American Society of Tropical Medicine and Hygiene in Galveston.

There is hope in some quarters that this drug might completely eradicate malaria, the world's Number One disease problem.

Even the conservative Public Health Service scientists say that a person could, if he took this new drug, go into a region heavily infested with malaria and never come down with malaria while there or after leaving the region.

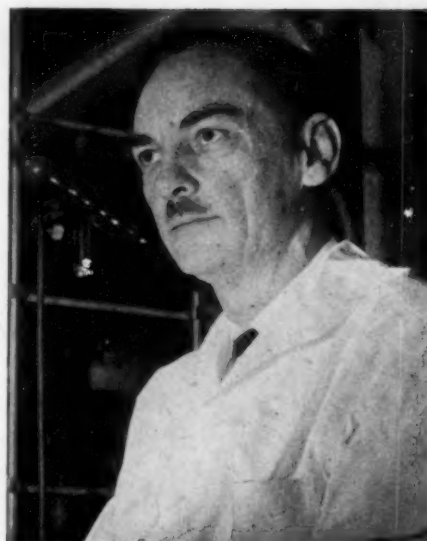
Prisoner volunteers at the U. S. Penitentiary in Atlanta, Ga., who were given this drug after being bitten by malaria-infected mosquitoes showed no signs of getting malaria as long as a year after being infected.

The drug is called Daraprim by its manufacturers, Burroughs Wellcome and Co. Its scientific name is pyrimethamine. It was made by Dr. George H. Hitchings of the Wellcome Research Laboratories at Tuckahoe, N. Y., in the course of a search for antagonists to nucleic acids. First news of it came in a report of mouse tests of Daraprim and related chemicals announced at

an American Chemical Society meeting in April, 1950.

The drug was then "kept under wraps" while undergoing tests in mice and birds by Dr. Ian M. Rollo of the Wellcome Laboratories of Tropical Medicine in London, England, and subsequently by the following U. S. Public Health Service scientists: Drs. G. Robert Coatney, Albert V. Myatt, Thomas Hernandez, Geoffrey M. Jeffery, W. Clark Cooper, Joseph Greenberg and Helen L. Trembley.

Daraprim is 12 or more times as powerful as chloroquine, standard antimalarial drug used as a suppressant to keep our fighting forces from getting malaria while serving in Korea or other malaria regions of the world. In the tests with prisoner volunteers, 25 milligrams weekly was as effective in suppressing malaria as 300 milligrams weekly of chloroquine. Even this small 25-milligram dose is probably more than is needed to suppress malaria. And, unlike chloroquine, Daraprim does a complete suppressing and curing job. Men taking chloroquine alone come down with malaria, if attacked by the relapsing form, after stopping the drug. Primaquine, recently developed, can be given to prevent these relapses. But Daraprim does the



DR. GEORGE H. HITCHINGS—In the course of a search for antagonists to nucleic acids, Dr. Hitchings first made the antimalaria drug, pyrimethamine.

whole job alone. Primaquine cannot do this because primaquine is too toxic to be given over a long period as a suppressant.

Daraprim is odorless and tasteless. It does not discolor the skin. It comes in a white tablet somewhat smaller than an aspirin or Empirin tablet. It is a cheap drug, both because it is inexpensive to manufacture and because it is so powerful that a little goes a long way. These features promise great advantage for public health programs in India, Africa and other regions where hundreds of millions are continually drained of health and strength by malaria.

The tests reported by Dr. Coatney and associates were made first in bird malaria. In the tests with birds, the mosquito *Aedes aegypti* (L.) is used to give the birds malaria. Shown on the cover of this week's SCIENCE NEWS LETTER is an *Aedes aegypti* (L.) mosquito, just after completing her meal of human blood. Humans get malaria from *Anopheles* mosquitoes.

These tests were a repeat of the tests made in London. Satisfied that the new drug did indeed have "unbelievable" potency as an antimalarial, Dr. Coatney and associates launched the tests with prisoner volunteers in Atlanta similar to those made by the same group in the development of primaquine.

These tests gave the new drug a rigorous trial, since they were made against the Chesson strain of malaria. This is a southwest Pacific strain known as a particularly "tough" one. White men infected by this strain are very sick, with fever of 105 degrees Fahrenheit and vomiting for hours.

The Public Health Service scientists also made tests to see whether the malaria parasites might develop resistance to Daraprim. This was possible under hospital and laboratory conditions, the tests showed, and



TEST DRUG ON CHICKS—Drs. Helen L. Trembley and Joseph Greenberg here inject the malaria-infected mosquitoes into baby chicks, part of tests to check on efficacy of the new drug, Daraprim. Dr. G. Robert Coatney (right) is watching.



PROTECTED BY DRUG—Dr. Thomas Hernandez of the U. S. Public Health Service uses a flashlight to drive a malaria-laden mosquito to the skin on the arm of a prisoner volunteer who is protected by Daraprim.

the resistance could be transmitted by mosquitoes. But the curative dose was so close to that at which resistance could be induced that it was considered unlikely that the build-up of resistance would be a deterrent to use of the drug.

As treatment for an acute attack of malaria, Daraprim was effective but took longer to act than chloroquine.

While these tests were going on in the United States, English researchers were testing the drug in Africa. These give hope that by treating the population through one or two rainy seasons, the disease can be eliminated. In one of these studies, in an isolated village, every person was treated at the time when most of them would be infected with malaria. The human population was cured in about two months and

the mosquitoes, which would have picked up the infection, were also kept malaria-free. In a bag of 100 mosquitoes at a time when all should have been carrying malaria germs from the people they had bitten, not one mosquito was found with the parasites in its body.

The new drug is on the market in London but not, as yet, in the United States.

While malaria is no longer a problem in this country, the new drug may nevertheless prove life-saving for American babies afflicted by a relatively new and generally fatal disease called toxoplasmosis. In tests with mice, Dr. Don E. Eyles of the Public Health Service found Daraprim combined with sulfadiazine produced more cures than any drug regimen tested to date.

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GENERAL SCIENCE

New View of World

► MAN'S AWARENESS of what he intends to do was given a place beside the predictions from physical observations in a new view of the world formulated by Dr. Arthur H. Compton, chancellor of Washington University, St. Louis, and Nobel laureate in physics. It provides a role for human responsibility.

Presented to the National Academy of Sciences meeting in St. Louis, Dr. Compton's hypothesis is that there exists an objective world regarding which observations,

such as scientists make, reveal one aspect and man's awareness reveals another.

The nature of the physical world is different as viewed by the theories of Bohr and Schroedinger, world-famous physicists. Niels Bohr of Denmark considers that the physical world includes only that which can in principle be verified by observations using material instruments. The wave mechanics of Erwin Schroedinger, now of Dublin, visualizes a physical continuum whose changes follow a strictly causal de-

terminism, but he holds that observations can give only partial information of this kind of world.

Dr. Compton's new view of the world is not the same as Schroedinger's continuum, but it does reconcile physical indeterminateness of man's actions with a high degree of determinateness from man's inner feelings, ideas, and intentions of which a person is aware. Dr. Compton feels that his formulation is an answer to Schroedinger's contention that an undetermined world violates the sense of moral responsibility.

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BIOCHEMISTRY

Gland Chain Reaction

Members of National Academy of Sciences hear reports showing that the very small adrenal glands are important in health functions not yet completely understood.

► ARTHRITIS, SEX and cancer all seem to have links with two very small organs of the body, the adrenal glands. These glands, situated just above the kidneys, have become well known to the layman since discovery that they produce cortisone.

Their other functions in health and disease are still not completely known. Members of the National Academy of Sciences meeting in St. Louis heard and gave reports of facts tending to solve some of the mystery of the adrenal glands.

The sex-gland-stimulating effect of these glands is achieved only when the adrenal glands themselves are sick and their hormone factory out of order, studies by Dr. Carl R. Moore of the University of Chicago suggest. In the sick state, the adrenal gland factory apparently produces chemicals with effects ordinarily attributed to sex glands.

Overgrowth of the adrenal glands is one fairly frequent condition in young men and women. Often it masculinizes the women. Apparently this is part of a complicated gland-hormone-reaction chain of which "only some major links are known," Dr.

Emil Witschi of the State University of Iowa, Iowa City, stated.

By giving large doses of female hormones he was able to produce this condition in tadpoles. The adrenal tissue was increased tenfold and the sex glands of genetically female larvae were transformed into hermaphrodite glands or male sex glands. But when the pituitary glands were removed before the female hormones were given, the adrenals did not enlarge.

The chain reaction, as now known, proceeds like this: The high female hormone concentration apparently decreases the sex gland influence of the pituitary. This in turn leads to an increase in ACTH production and a consequent overgrowth of the adrenals. At a certain level, the hormones produced by the enlarged adrenals reach a masculine level which in frogs is enough to dominate even the sexual differentiation of the male and female sex glands.

Cortisone, famous anti-arthritis hormone of the adrenal glands, can be converted into the biologically active Compound F by the liver, Dr. Albert B. Eisenstein of Washing-

ton University School of Medicine, St. Louis, reported. This discovery, made by incubating rat liver slices in small amounts of cortisone, shows that the liver can not only inactivate steroid hormones such as the sex hormones but may also be able to produce other active hormones.

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MEDICINE

Cigarette Smoke Tar Found Cancer-Producing

► TAR FROM cigarette smoke will produce cancer in mice when painted on the skin over a period of about a year, Drs. Evarts A. Graham, Ernest L. Wynder and Adele B. Croninger of Washington University School of Medicine, St. Louis, and Memorial Center, New York, reported to the National Academy of Sciences meeting.

A connection between cigarette smoking and lung cancer had previously been reported by Dr. Graham and by English scientists. These statistical studies, Dr. Graham said, showed that in cases of cancer of the lung there is almost always a history of excessive cigarette smoking for a period of at least 20 years, and that it is rare to find a case in a non-smoker.

Lung cancer, he pointed out, has increased so much in frequency in the past 40 years that it is now the most common internal cancer in the male sex.

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NUTRITION

Daily Iron Ration Needs Increasing

► THE IRON ration at present recommended for the daily diet needs to be increased, it appears from studies reported by Drs. Carl V. Moore and Reuben D. Dubach of Washington University School of Medicine, St. Louis, at the meeting of the National Academy of Sciences in that city.

To get the most out of iron-containing foods, vitamin C is needed, their studies also suggest.

The present recommended ration of about two-tenths of a grain (12 to 15 milligrams) per day is "none too high," these scientists state on the basis of their findings.

Only 10% or less of the iron in foods is actually absorbed, they found from studies with foods containing radioactive iron which could be traced through the body and its assimilation measured. The foods they studied were those which could most easily be produced or grown so as to contain the radioactive iron. These were eggs, chicken and rabbit liver, chicken muscle, mustard greens and spinach.

Healthy persons absorbed less than 10% of the radioactive iron in these foods. Persons on iron-deficient diets did not assimilate the iron from food any more efficiently than normal persons. Giving vitamin C or foods containing it enhanced the absorption of iron from food.

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HOME ECONOMICS

Farmhouses That "Grow" Get Experimental Tryout

► FARMHOUSES THAT "grow" with the family currently are being tried out on an experimental basis by the U. S. Department of Agriculture.

Designed for young couples of modest incomes, the farmhouse starts out as a basic two-room unit to which other rooms can be added as the family grows. The basic unit consists of a kitchen and living room, plus a bath and closet space.

Three such basic units already have been built at the Agricultural Research Center, Beltsville, Md. One has been occupied recently by two house-testers who are advising the designers of the "livability" of the economy houses.

Each of the three experimental houses is built of different materials. Each incorporates different cost-cutting ideas. Later comparisons should reveal which materials and ideas are the best.

Both kitchen and living room of the basic house are "generous" in size so they will match the expanded house later. The living room doubles as a bedroom, and has two lounges, one at each end of the room. When not in use as beds, the lounges are slip-covered and are pushed partly under their headboards.

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EXPANSIBLE FARMHOUSE DESIGN—Architect's sketch of the two-room expandable farmhouse which has been furnished by the Bureau of Human Nutrition and Home Economics for tests of living convenience. The basic unit is outlined in black, projected additions by dotted lines.

PUBLIC SAFETY

Motoring Safety Rule

Items on rear shelf of automobile can become lethal weapons on sudden deceleration, tests show. Engineers recommend its elimination in future cars.

► ENGINEERS AIMED a 1952 automobile sedan down a rain-soaked Municipal Airport runway at Portsmouth, N.H., got it rolling 55 miles an hour and crashed it headlong into a string of four cars lined bumper-to-bumper across the strip. This is what happened:

Heavy objects on the shelf under the back window became death-dealing shrapnel, just as savage as the battlefield variety. A quart-sized can of motor oil sailed forward, fracturing the driver's skull. A piece of chalk ricocheted from the back-window shelf to the driver's sun visor, bouncing back to the rear seat and finally to the floor. A 14-year-old girl was thrown under the dashboard, receiving a fractured hip, a broken knee and instep, a dislocated left shoulder but no injuries to the head.

Actually, no humans were injured in the crash. The "driver" was a piece of iron standing upright in the driver's seat, and the 14-year-old "girl" was represented by a dummy of the proper proportions.

But the engineers concluded that at least those injuries would have been sustained had the car crashed under the same circumstances with human occupants.

A. J. White, director of Motor Vehicles Research, Inc., Boston, warns drivers to keep the rear shelf of their cars free of all objects.

"Any items carried on the rear ledge of a car would become lethal shrapnel in case of a crash deceleration or even in a panic stop by application of brakes," he said.

The research group furthermore called upon design engineers to eliminate the back-window shelf in future cars to increase motoring safety.

They also pointed out that practically all automobile seat anchors should be strengthened. Under the impact of the collision, the seat anchors in the test car were strained by the weight of the seat alone. Had anyone been sitting on the seat, the supports probably would have snapped.

The test car was driven by a research engineer until he put it into high gear at about 15 miles an hour. Then the driver got into another car moving alongside the test vehicle. By remote control the test car was guided into the string of autos.

It rammed into the rear bumper of car number two, knocking that car so that it faced toward the direction from which the test car had come. Almost at the same instant, the crash car struck the left front wheel of car number three. Then the crash car's rear end swung around, slamming into the broadside of car number three and knocking that car 52 feet. The crash car lumbered another 92 feet before stopping.

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NATURAL RESOURCES

Crude Oil Sufficient

► THERE IS plenty of petroleum within the United States to meet all requirements for many years to come, it was predicted at the meeting of the American Petroleum Institute in Chicago. The prediction was made in the light of present proved reserves, probable reserves and the rapidly growing demand for liquid fuels.

"It is my firm conviction that the domestic oil industry can supply sufficient oil to meet all of our needs for the foreseeable future," declared John E. Swearingen, manager of production of the Indiana Standard Oil Company.

He presented an analysis of the probable availability of crude oil and natural-gas liquids during the next 15 years. The probable demands for the same period were presented by John W. Boatwright, manager of distribution economics for the same company.

In considering these predictions, Mr. Swearingen stated, it should be kept in

mind that geologists in the United States and Canada have been very successful in finding new oil fields during the past two or three years. This is responsible for their confidence in their continued ability to find oil.

Pointed out among relatively recent discoveries were the oil fields of west Texas, the Gulf Coast, Alberta, Canada, and Nebraska, Colorado and Utah. Perhaps most important of all, he said, is a major new oil province in the Williston Basin, North Dakota. The outlook today, he indicated, is brighter than it was five years ago. "We feel that domestic production of crude oil will continue to increase over the period we have considered." He added, "We shall be finding oil faster than we shall be using it."

American oil industry by 1967 will be producing about 8,000,000 barrels per day of crude oil and 1,100,000 barrels per day of natural-gas liquids, an increase of about 33% over today's production, he stated.

He pointed out areas in the United States believed by petroleum geologists to contain oil but which as yet have not been explored by drilling. It is only by drilling that the presence of deep oil can be proved.

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PHYSIOLOGY

New Hearing Theory: Ear Like Microphone

► A NEW theory of hearing was proposed by Drs. Hallowell Davis and Ichiji Tasaki of the Central Institute for the Deaf, St. Louis, at the National Academy of Sciences meeting in that city.

Within the ear there is an organ which these scientists compared to the carbon microphone circuit familiarly used in telephones and radios. In the carbon microphone circuit, a change of resistance in the microphone modulates the flow of direct current from a battery through a well-defined circuit.

In the ear, the nerve endings on the sensory cells for hearing are part of this circuit and can be stimulated by changes in the current flowing through them.

The sense organ for hearing, according to this theory, does not merely transmit the energy of the stimulus. The stimulus controls the release of additional energy from an especially available source.

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SOCIOLOGY

Births, Not Deaths, Now Control Population

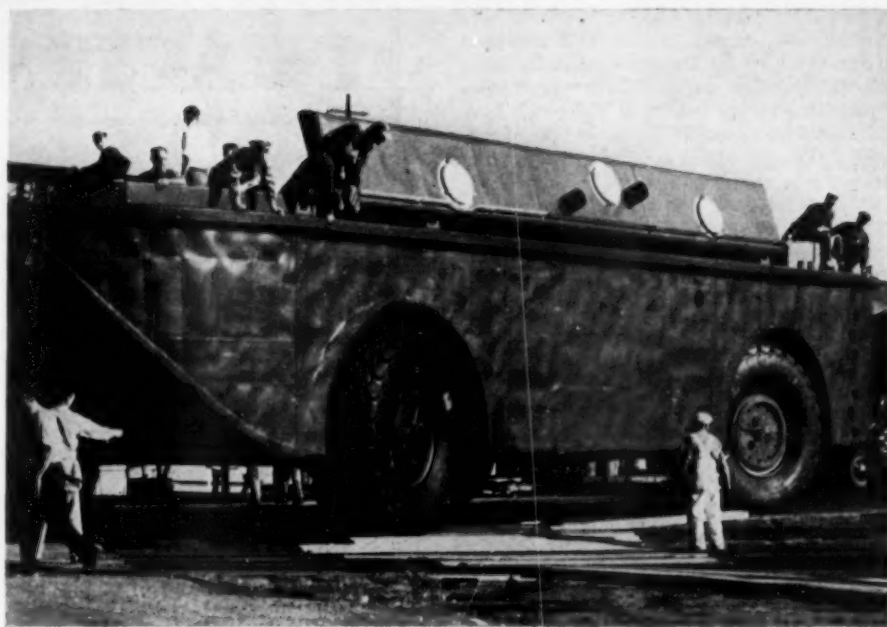
► BIRTHS RATHER than deaths now control the composition of population and human evolution among western peoples, Frederick Osborn, population authority of New York City, told the American Philosophical Society meeting in Philadelphia.

Less than a century ago, before modern medicine and birth control, there were large families, life expectation was half what it is now, and a substantial proportion of the children died before they themselves had children. Deaths ruled the peopling of the earth.

Now man's future is no longer in the hands of blind forces, Mr. Osborn finds, because, "consciously or unconsciously, individual couples under the influence of the psychological environment reacting with their personal predilections, will determine which strains will survive."

The reduction in births now is the result of contraception rather than of reduced fecundity, studies have indicated. Age at marriage is a major factor in size of family. With uneven use of contraception in large groups, the lower the economic status, the larger the family. In groups where everyone uses contraceptives carefully, the higher the economic status, the larger the family, but there are so few large families that the birth rate is below that needed for replacement.

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GIANT CARRIER—The new U. S. Army "Barc," amphibious troop and supply carrier, depends upon the world's largest tires for mobility on beaches and land. The rubber used in these four tires, according to the Firestone Tire and Rubber Company, would make more than 600 popular-size passenger car tires.

BIOCHEMISTRY

Hypertension Effects

Simultaneous treatment with two new drugs reverses many effects of high blood pressure. Over 200 patients have benefited from double drug method.

► MANY OF the effects of high blood pressure, especially congestive heart failure, kidney trouble and angina pectoris, are reversed when patients are treated with two relatively new drugs at the same time, Drs. Henry A. Schroeder, H. Mitchell Perry, Jr., and John D. Morrow of Washington University School of Medicine, St. Louis, reported at the meeting of the National Academy of Sciences in that city.

More than 200 patients have been treated with "benefit" by this double drug method, they reported.

The two drugs are hexamethonium chloride and 1-hydrazinophthalazine.

High blood pressure can only be reversed, these scientists declared, by antagonizing simultaneously the two influences which raise the blood pressure. One of these is dependent on the blood vessel constricting mechanism of autonomic nerves. Hexamethonium chloride blocks this influence by acting on the ganglia or centers for such nerves.

The other blood pressure raising influence comes via the kidneys and is started by an anemic state of these organs. It is dependent on a chemical called pherentasin and

probably other primary amine chemicals in the blood. To inactivate pherentasin, 1-hydrazinophthalazine is given.

The drugs must be given in frequent doses because they are destroyed or excreted rapidly.

Further Research Needed

A manufacturer of the two drugs for high blood pressure, hexamethonium chloride and 1-hydrazinophthalazine, Ciba Pharmaceutical Products, Inc., Summit, N. J., warned that, although both drugs have now been put on the market, patients should not try to urge their doctors to use them. The reason given by Ciba is a conflict between medical experts on the drugs. Further research, it is suggested, will resolve this conflict.

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The quality of honey is not revealed by its color.

Many clock gears can be pressed from powdered metal at about half the cost of previous methods.

PEDIATRICS

Success With Six-Hour Baby-Feeding Schedule

► SOME 300 babies in the Miami area are being successfully raised on a new, easier-on-mother, feeding schedule. Right from birth, these babies get fed every six hours instead of at the customary two-, three- or four-hour interval. They get solid foods as early as the second day of life.

The babies are as healthy, gain as well and have as red blood as those fed on more conventional schedules, Dr. Walter W. Sackett, Jr., of Miami reported at the meeting of the Southern Medical Association in that city.

Dr. Sackett devised the schedule partly to relieve mothers from losing sleep and being always tired because of the constant demands of their babies when feeding them every two, three or four hours. This fatigue, plus undue concern over the welfare of the babies, contributes to the tension and fears of present day living and helps bring on physical and functional disorders, Dr. Sackett believes.

Babies themselves, he finds, have less upsets, do not become feeding problems and are less likely to develop allergies when on the new schedule.

Mothers who nurse their babies are able to do it every six hours, just as many mothers with wartime jobs found they could nurse their babies only twice a day.

The six-hour schedule calls for three daily meals and a middle-of-the-night feeding. The latter is to be stopped, Dr. Sackett advises, as soon as mother or baby finds it easier to sleep through the night than to wake up for the feeding.

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BIOLOGY

Pieces Not Fitted Into Photosynthesis Puzzle

► VARIOUS PIECES in the solution of the puzzle of photosynthesis, or how the green plant uses the sunshine's energy, are being discovered, but a direct and complete understanding has not yet been obtained, Prof. Martin D. Kamen of the Washington University School of Medicine told the National Academy of Sciences meeting.

Among the discoveries made, as listed by Dr. Kamen, are:

Radioactive labeling of compounds and new analytic techniques have determined the intermediate chemicals formed during reactions taking as little as a few seconds.

Stable, active cell-free systems exhibiting a number of the partial reactions of photosynthesis have been achieved. These demonstrate that the photoactivation process produces reducing systems that may be coupled with events that take place during respiration.

Studies with bacteria have revealed some details of the manner in which synthesis of cell constituents is affected by photoactivation.

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CHEMISTRY

**Glycol Motor Oil
Good in Arctic Weather**

► **NEW SYNTHETIC** motor oils that lubricate truck and automobile engines satisfactorily, even under Arctic conditions, were described to the Society of Automotive Engineers meeting in Chicago.

J. A. Miller and H. F. Galindo, both of the California Research Corporation, Richmond, Calif., reported that synthetic oils made of polypropylene glycol give excellent performances in Alaska, Canada, and the coldest parts of the United States where temperatures often plunge to minus 35 degrees Fahrenheit.

Even in the coldest weather, the new synthetics remain fluid enough to permit the engine to be started easily. They have the advantage also of not "boiling away" rapidly after the engine reaches its normal operating temperature of about 180 degrees.

Military requirements are demanding new and better oils for use in cars and trucks in the Arctic. Present make-shift methods of getting sluggish engines started often result in damaged vehicles.

The synthetic oils can be made from materials "readily available," and with no major troubles of manufacturing. Although "somewhat more expensive than mineral oils," they are relatively cheap when compared to other synthetics having the same properties.

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GERONTOLOGY

**Lists Four Essentials
For Treating Old People**

► **FOUR ESSENTIALS** for treatment of older persons who are undernourished, or suffering from "nutritive failure," were given by Dr. Tom D. Spies of Chicago and Birmingham at the meeting of the Southern Medical Association in Miami.

The four are: 1. Diet, furnishing adequate protein, vitamins and minerals in suitable and edible form for the individual person.

2. A basic supplement of vitamin A, thiamin, riboflavin, niacinamide, ascorbic acid, folic acid, vitamin B-12 and "activator" when necessary.

3. Additional medication as indicated for coexisting diseases.

4. Natural B complex such as dried brewers' yeast powder or liver extract.

"All of us," Dr. Spies stressed, "are composed chemically of the air we breathe, the water we drink and the food we eat. Every day of our lives the substances of our bodies are being replaced in intricate combinations and these substances must come from water, air or food. Few persons indeed know, from a chemical point of view, how to feed themselves correctly.

"The answer as to how it should be done is not simple. It must begin with the acquiring of greater knowledge which will

come from broader and more intensive research into human nutrition and metabolism. Finally this knowledge must be transmitted through the physicians who are the guardians of the health of the people. At the present time physicians see patients in the last stages of disease and only too often there is nothing to advise.

"Until recently it was not known that diseases were specifically related to diet, but within the past few decades we have practically eradicated such scourges as scurvy, beriberi, pellagra, pernicious anemia, nutritional macrocytic anemia, sprue, rickets, from large portions of the earth."

Science News Letter, November 22, 1952

AERONAUTICS

**New Airplane Needs
Only Short Runway**

► **SAFER FLYING** by private planes is promised with a new aircraft now in production at Norwood, Mass. It requires only a short runway for take-off and landing, and can travel through the air at a slow speed, comparable with the medium speed of an automobile on the highway.

The new plane, known as the Helioplane, is being manufactured by the Helio Aircraft Company of Norwood. It was designed by a staff member of the Massachusetts Institute of Technology with the aid of a Harvard University professor, both experts in aviation. Otto C. Koppen is the MIT designer; Dr. Lynn Bollinger is the Harvard man.

A military version of the airplane has been under construction for several months and will be ready for delivery to the U. S. Air Force before the close of the year. The civilian model, now in production, will be ready for commercial use early in 1953. It will be called the Courier model.

It is an all-metal plane, powered by a 260-horsepower Lycoming engine, that will be able to cruise at 150 miles an hour but can be throttled down to a speed of 35 miles even with a full load. It can operate comfortably with full load from a 100-yard strip. It has very large flaps to permit slow landings, and leading-edge automatic slats to eliminate stalls in slow flight.

Science News Letter, November 22, 1952

MARINE BIOLOGY

**Fish Sounds Indicate
Where Catch Is Good**

► **FISHERMEN** MAY be able to locate and identify schools of commercial fish, long before they would be found otherwise, by using underwater listening devices.

During exploratory cruises in the Gulf of Maine this summer, a group of U. S. Fish and Wildlife Service scientists, directed by Virgil E. Harris, made underwater recordings of the sounds of schools of fish. After analyzing them, work will be started to develop listening devices particularly sensitive to the sounds of fish of commercial importance.

Science News Letter, November 22, 1952

IN SCIENCE

MEDICINE

**Anti-TB Drug Promising
In Leprosy Treatment**

► **"ENCOURAGING"** RESULTS in treating Hansen's disease (leprosy) patients with the new anti-TB drug, isoniazid, were reported to the American Society of Tropical Medicine and Hygiene meeting in Galveston, Tex.

The report was made by Drs. Fernando Latapi and Obdulio Rodriguez of Mexico City, Dr. Jose Barba Rubio of Guadalajara, Mexico, and Dr. Santiago Castro Estrada of the Squibb Institute for Medical Research, New Brunswick, N. J. The drug used was Squibb's brand of isoniazid, Nydrasid.

Most of the patients studied suffered from the lepromatous type of the disease. All of these showed improvement. Nodules on the skin decreased in size and numbers. In some cases they almost completely disappeared. New ones did not develop. Sores inside the nose and eyelids also improved. Microscopic examination of the leprosy spots on the skin showed changes resulting from the isoniazid treatment.

The patients lost a little weight during the first weeks of treatment but most of them subsequently gained more than they had lost. There were no toxic reactions from the drug and the few lepra reactions that occurred were so mild that they were no problem.

"The results obtained," the doctors stated, "justify the continuation and widening of this study."

Reason for trying isoniazid in treatment of this disease is that certain drugs, such as the sulfones, that are active against the tuberculosis germ have been found useful in treating leprosy, or Hansen's disease.

Science News Letter, November 22, 1952

NUTRITION

**Chilling Tropic Fruits
Causes Vitamin C Loss**

► **EXPOSURE** OF tropical fruits like pineapples and bananas to near-freezing temperatures causes loss of vitamin C, or ascorbic acid, Dr. Erston V. Miller and Alan S. Heilman, biologists at the University of Pittsburgh, reported.

They found that pineapples kept just above freezing for a week lost almost 40% of their vitamin C content. It has been noted before that tropical fruits lost vitamin C during chilling, but this was thought to be due to a general decomposition of the fruits, not cold alone. This experiment proved that cold alone can cause vitamin C loss, the scientists said. They report details of their work in *Science* (Nov. 7).

Science News Letter, November 22, 1952

SCIENCE FIELDS

MEDICINE

Cigarettes Play Part In Heart Circulation Ills

► CIGARETTE SMOKING, already blamed by some as a cause of lung cancer, may also play a part in causing heart and blood vessel diseases.

Calling it a "contributing factor" rather than a primary cause of heart and blood vessel diseases, the *Journal of the American Medical Association* (Nov. 8) calls for "intensive investigation" of the relation between the two.

Doctors should pay more attention, says the AMA journal, to "a nicotine-containing agent that is used by the public in amounts equal to, if not greater than, any other drug."

Smoking one or two cigarettes, it is pointed out, causes release into the blood stream of a pituitary gland hormone in quantities sufficient to constrict the heart arteries of dogs and presumably also of man. Alcohol does not uniformly prevent blood vessel constriction and drinking a cocktail will not necessarily nullify the blood vessel constricting effects produced by smoking.

Science News Letter, November 22, 1952

GENERAL SCIENCE

Russians Push Training Scientists and Engineers

► THE RUSSIANS are making intensive efforts to catch up with the western world in the number of scientists, technicians, engineers and doctors they have, recent Soviet publications reveal.

College and graduate school attendance has almost doubled in ten years, and has gone from 734,000 in 1948 to 974,000 in 1952. This does not include military institutions of higher education. The comparable American figure is 2,225,000.

These and other figures "open up possibilities of profound new developments in science, technology and other fields," according to Demetri Shimkin of the Russian Research Center, Harvard University. "It is a phenomenon that permits of no complacency on the part of the West," Dr. Shimkin states.

In 1950, 21,000 Russians were studying for Ph.D.'s—last year this country produced some 35,000 Ph.D.'s. Russia now has some 475,000 engineers and natural scientists in manufacturing, construction, transportation and communication. We have an overall total of 450,000 engineers and 200,000 natural scientists.

Graduates from technical and other specialized secondary schools have also gone up in the Soviet Union. In 1940, 164,000

students graduated, in 1948, 252,000. This rise has continued.

Soviet schools are turning out physicians, dentists and pharmacists in ever increasing numbers. Net increase in these fields was 26,000 in 1949. Numbers graduating in these fields in 1951 in the United States were 13,800.

This is substantial evidence of "a rapid rate of increase in that country's professional labor force in recent years," Mr. Shimkin commented in *Science* (Nov. 7).

Science News Letter, November 22, 1952

BIOPHYSICS

Chemicals Promise Aid To Ray-Damaged Bones

► SIX READILY available chemicals may be useful in treating damaging radioactive material which accumulates in bones, according to Dr. Norman S. MacDonald of the University of California at Los Angeles Atomic Energy Project.

It was indicated in tests with rats that three of the agents—ethylene diamine tetraacetic acid, casein hydrolysate and pectin—would be very effective in such therapy. Three others—glucuronolactone, oxy-polygelatin and polyvinyl pyrrolidone—showed enough promise to merit further study.

Such therapy, said Dr. MacDonald, would be particularly important in the case of radioactive material which might enter the body through the mouth, by inhalation or through wounds. Radioactive isotopes from such material are deposited in the bone, seriously affecting the normal functions of bone marrow.

Several of the substances are being investigated in studies elsewhere for possible use as blood plasma substitutes. If proved successful in both capacities, they will have a dual function in case of atomic warfare.

Science News Letter, November 22, 1952

NUTRITION

Blend 30% Coffee Husks For Satisfactory Brew

► INDIAN SCIENTISTS have discovered that coffee husks, now discarded as waste in the processing of coffee berries, can be blended with whole coffee to make a highly satisfactory brew.

Combinations up to 30% of roasted husks with coffee beans will make a good beverage, report C. P. Natarajan, D. S. Bhatia, and V. Subrahmanyam of the Central Food Technological Research Institute, Mysore, India. This can mean valuable savings as the husk represents 30% to 40% of the whole coffee berry.

Chief use for the husk would be as a substitute for chicory. Indians are very fond of strong, bitter, chicory-laden coffee, and import about a million pounds of it annually. Use of coffee husks, which is strong and potent in caffeine, could be of substantial economic benefit for India.

Science News Letter, November 22, 1952

PHYSICS

Antineutrino Discovery Theoretically Required

► THE LITTLE atomic particle that is not there—at least it has not been experimentally demonstrated even though it is required by theory—should have a running mate, the antineutrino.

Prof. H. Primakoff of Washington University in St. Louis told the National Academy of Sciences meeting there that the neutrino, long postulated as necessary, is by a preponderance of present evidence accompanied by an opposite sort of particle, the antineutrino.

When an atomic nucleus disintegrates with the emission of two electrons, they are accompanied by two antineutrinos, unless the life of the decay is longer than seems probable.

But neither the neutrino nor the antineutrino has yet been discovered.

Science News Letter, November 22, 1952

CHEMISTRY

Petroleum Increasing In Chemical Importance

► THE GROWING importance of petroleum as a raw material for the production of chemicals was emphasized at the American Petroleum Institute meeting in Chicago by T. S. Petersen, president of Standard Oil Company of California.

The petroleum industry today produces about one-quarter of the nation's organic and inorganic chemicals, he said. In ten years that figure will likely rise to 50%, he predicted. In spite of the rapid growth of the petrochemical industry, it consumes less than one percent of the total petroleum production.

One of the more spectacular evidences of the value of research is the birth of the petrochemical industry, Mr. Petersen stated. The swift perfection and adoption of chemical synthetics quickly ran away from the coal-tar and agricultural industries. They could not supply sufficient raw materials, so the oil industry stepped into the breach.

Among chemical supplies provided by the oil industry, Mr. Petersen cited the tremendous production of nitrogen fertilizers now making land more productive as well as the industrial alcohols made from petroleum. Grain and sugar long used for making alcohol are now available for food. Petroleum detergents are threatening to take over the packaged-soap market, freeing fats and vegetable oils for other uses.

The growing use of petroleum and its products for traditional uses, as well as in the petrochemical field, is promoting a search for more oil deposits. In our unending search for additional oil and natural gas, he stated, we are turning more and more to science. We are turning to geology, geophysics, engineering, paleontology, geochemistry, micropaleobotany and a host of other specialties.

Science News Letter, November 22, 1952

ANTHROPOLOGY

Thanksgiving Is World-Wide

Throughout history, nearly all of mankind has offered thanks to its deities at harvest time. The Indians were not surprised at the first Pilgrim Thanksgiving.

By HORACE LOFTIN

► AMERICANS LIKE to think of Thanksgiving as an occasion particular to our young nation, a unique heritage handed down from the grateful Pilgrim Fathers. But those unsentimental people, the scientists, have shown that Thanksgiving is far from being our own private festival.

Anthropologists who study the customs of man across the globe and archaeologists who look into man's dim past tell us that harvest festivals are a universal and persistent part of nearly every known culture.

The Pilgrims themselves inherited the tradition of thanksgiving from old English, Anglo-Saxon and Celtic customs. The

practice of harvest ceremonies all through Europe can be traced back to the most remote periods of pre-Christian times of which we have any record.

Sir James G. Frazer's famous book, "The Golden Bough," tells of an old Lithuanian harvest feast that is typical of the ancient European thanksgiving tradition. At the time of autumn sowing, after the summer's harvest had been gathered, the Lithuanian peasant would gather nine handfuls of each kind of grain he grew, and mix them all together. Part of the mixture was used to make a loaf of bread for each member of the family, and the rest was made into beer.

When the beer had fermented and was ready for drinking, the farmer knelt before the barrel and drew out a jugful which he poured over the barrel's spout. Then he chanted: "O fruitful earth, make rye and barley, and all grains to flourish."

After this ritual, the farmer went into the parlor where the family was waiting. A rooster and a hen were placed on the parlor floor which the farmer then killed, meanwhile offering prayers of thanks. Then the farmer's wife boiled the chickens in a new, unused pot.

When the chickens were cooked, the family gathered around the table. The beer and three mugs used only on this solemn occasion were brought out, along with the loaves of bread and the chickens. The father made a prayer of thanks and drank down the three mugs of beer. The mugs were passed to the next person, and the process was repeated around the table until everyone had emptied the mugs nine times.

No Left-Overs Allowed

All the food and drink had to be finished at the meal, a thing which many modern American housewives wish might happen as they try to think of new ways to use the left-over turkey.

But even the Indians were not at all surprised at the Pilgrims' Thanksgiving feast. Religious ceremonials, dances, and feasts of thanks were a part of nearly every Indian culture. All over the American continent where tribes depended on corn in order to live, the Indians offered thanks when the crop was ripe or harvested.

The Creek Indians that inhabited the region now called the Deep South gave thanks to their gods when the corn was ripe, usually in late July or August. According to "The Golden Bough," the Creeks burned all of their old clothing, household goods and furniture at the be-



INDIAN THANKSGIVING—
American Indians celebrated thanksgiving at harvest time long before the Pilgrims came to this continent. The Pueblo dancer shown here has exchanged his drab tribal costume for this colorful one from the South-ern Plains Indians.

ginning of the thanksgiving period. Fires in the village were extinguished. The area in and around the altar was scoured to remove any source of "pollution" to the new corn to be offered the gods.

Then all the able-bodied men came into the holy square around the altar where they fasted two nights and a day to purify themselves for receiving the new corn. Guards were posted to keep all women from the sacred spot. During this time of fasting, women, children, the sick and the old were allowed to eat after noon but never before.

When the fasting ended, food from the previous year's harvest was brought to the sacred square, where there was a general feast. All traces of the food had to be removed before noon, however.

As the sun set, the people hid in their huts, destroyed every trace of fire, and kept utter silence. Then the priest made a new fire, and a basket of the new corn was brought to him which he blessed and of-

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ferred to the gods. The new fire was placed in the square from which the women gathered brands to light their extinguished hearths.

Afterwards, a period of feasting and celebration reigned for several days, with dancing, games and mock battles. The Creek thanksgiving lasted eight days in all.

The world over, from the most primitive tribes to the greatest and most modern of people, mankind has always found it good to rest a while, count its many blessings, and offer thanks for them. It seems that this thing we call Thanksgiving is in the hearts of all men.

Science News Letter, November 22, 1952

AERONAUTICS

Self-Starters for Jets

► THE PROBLEM of a self-starter for turbo-jet engines, the power plant in jet-propelled airplanes, is approaching solution by developments both in America and England.

In both countries the solution seems to be a tiny rocket-type engine within the plane electrically started by push-button to provide the power to start the main engine into operation.

The self-starters used with piston engines in conventional planes cannot be used for jet engines because of the large amount of power needed. The use of jet-propulsion in aircraft has been held back by the necessity of outside power at airports to put their engines into operation.

With satisfactory self-starters built into them, they will be able to take off from emergency fields in combat and other areas where outside electric power is not available.

Several types of self-starters for jet engines have been developed during the past few years, but few were successful enough to be generally adopted. The newest types use a small jet engine within the plane to start the main power plant. The small jet engine uses a liquid or a solid fuel and operates somewhat like a rocket engine.

The new British type of self-starters is described as a miniature gas-turbine with a combustion chamber, a turbine and a shaft. For fuel it uses a little-known liquid known

TECHNOLOGY

Improve Riveted Joints By New Design Formula

► RIVETED JOINTS can be 85% as strong as the unbroken metal, according to a new formula painstakingly worked out by a University of Illinois graduate student.

After conducting 130 tests and studying more than 2,000 others, Frederick W. Schutz, Jr., worked out a means of designing rivet patterns to achieve an 80% to 85% efficiency. Efficiencies now run around 75% for patterns from present formulas.

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as propyl-nitrate. When ignited, it produces power to drive the small turbine. This is geared to produce up to 10,000 revolutions per minute on the shaft, sufficient to start the main engine.

The most recently announced American self-starter is a development of Bendix Aviation Corporation, Teterboro, N. J. It is a typewriter-sized 75-pound starter, which burns a mixture of high-pressure air and jet fuel. It is already in production and is being installed on Sapphire jet engines, power plant of the new Air Force F-84-F fighter-bomber.

A self-starter revealed recently by General Electric uses a solid fuel to operate the small jet-engine type of starter. The fast-burning solid, in a replaceable cartridge, is ignited electrically.

British officials claim the liquid propyl-nitrate fuel system is better than the solid fuel system, because the latter is limited by the number of cartridges available while the liquid propellant is limited only by the size of its carrying tank.

Science News Letter, November 22, 1952

VETERINARY MEDICINE

Cows Can Fatally Over-Eat Green Corn

► WHAT CANDY is to kids, new or soft corn is to cows. And like kids, cows will over-eat their favorite foods if given a chance.

For this reason, the American Veterinary Medical Association has put out a warning to farmers, advising them to keep their cattle out of the cornfields until the grain has had a chance to dry out.

Wait until a light snow has fallen before turning cattle into the fields, the veterinarians suggest. If they must be allowed to forage early, let the animals fill up on hay a few days beforehand.

If stock does manage to become gorged on soft corn, it should be kept off water for 48 hours to prevent fatal bloating, and a veterinarian should be called.

Science News Letter, November 22, 1952

Philosophical Library Publications

Development of the GUIDED MISSILE

by KENNETH W. GATLAND

This book presents factually all the main information now available on the development of guided weapons in Britain, the United States, Germany, the U.S.S.R. and elsewhere, and outlines their present and future possibilities.

A unique feature is the appendix showing the characteristics of all the more important powered missiles known to have been designed or constructed—a total of 90. Air Chief Marshal Sir Alec Coryton, former Chief Executive (Guided Weapons), Ministry of Supply, has contributed a foreword to this important book, and it is very fully illustrated.

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HARWELL

THE BRITISH ATOMIC ENERGY RESEARCH ESTABLISHMENT 1946-1951

Prepared by the Ministry of Supply and the Central Office of Information

This book presents the first connected story to be published of the work and problems of the Atomic Energy Research Establishment, Harwell, from its inception in 1946 until the end of 1951.

After giving a brief account of the events leading to the formation of the British Atomic Energy Research Establishment in 1946, and a review of its organization, there is an outline of the main tasks on which Harwell is working. These are treated under four heads: (1) the production program; (2) isotopes; (3) nuclear reactors, and (4) particle accelerators.

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by CECIL HUNT

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GENERAL SCIENCE

Peace by Cooperation

► THE PRESIDENT-ELECT'S brother, Milton Eisenhower, calls for economic, political and military cooperation among the peoples of the world to build the peace of the world.

"We are clearly at a period in history when, to gain our great purposes," Dr. Eisenhower said, speaking as president of the Association of Land-Grant Colleges and Universities, "we must depend primarily upon persuasion rather than coercion. While remaining militarily and economically strong so as to discourage an enemy who respects only power, we must at the same time build the sturdy structure of permanent peace."

Dr. Eisenhower is also president of Pennsylvania State College.

Pointing out that "we can no longer use war to serve our real purposes," Dr. Eisenhower said that "modern atomic and biological war would create the very economic chaos and human misery in which communism tends to thrive and democracy tends to die."

The general's brother hesitated to suggest what total set of actions the United States might take to assure peace and stability, but he said that we must be strong militarily, economically, intellectually and morally. As education has from the beginning of our

history been essential to the maintenance and development of our free system, he pointed out, "so too must education now directly make a mighty and continuing contribution to the military, economic, intellectual and moral strength of our nation, and at least indirectly to all cooperating nations which are determined to be free."

Dr. Eisenhower declared that all streams of modern history are surging relentlessly toward the unification of our world. Physically, it is already one, he said; the core of our problem is that it is divided into two great parts, intellectually and morally.

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NUTRITION

Ways for Cooking Beans

► NOW THAT winter is here, thrifty housewives will be using dried beans, peas and lentils to make nourishing, budget-easing main dishes. New methods and new recipes make the use of these foods easier and more interesting.

Instead of pork and beans, for example, you might try a dish of beans and frizzled beef. Or you can use beans, alone or with a bit of meat, in stuffed peppers. Lima bean and sausage casserole is another dish that may be new and appetizing to you and your family.

Recipes for these and other dishes plus directions for quicker cooking of dried beans, peas and lentils are available in a new booklet prepared by Mary T. Swickard, food specialist of the U. S. Bureau of Human Nutrition & Home Economics. (See p. 334.) Why the dried bean family is a good buy is explained by Miss Swickard as follows:

"All bean-family foods are hearty because of their carbohydrate, which the body uses for energy. They contain some B vitamins. They are nuggets of mineral value for the iron and calcium they contain. And with all this, they provide useful protein, which the body requires to build and repair its organs and tissues.

"You can get the most good from these bean-family foods if you have in the same meal some grain food, like bread, or some meat, cheese, milk, or other protein from an animal source. Baked beans with brown bread, pork and beans, and chili con carne are good teams for nutrition as well as flavor."

The nutritional team-work, she adds, is due to the fact that proteins in foods are made up of different combinations of amino acids. Some proteins are more complete and, therefore, more useful than others for the body's needs. There is especially good protein in meat and other foods from animal sources, and even a little combined with bean protein makes a strong team.

Do You Know?

The body cannot store large quantities of vitamin C.

Eggs of insect *roaches* will not hatch if the parents are deficient in vitamin B-12.

Hunting is one of the few activities of modern living that does not require eyes to be used unnaturally.

More than 41,000,000 words clicked over Western Union wires in connection with the 1952 Presidential election.

About two-thirds of the world's population live in underdeveloped areas where the life expectancy is about 30 years.

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ARCHAEOLOGY

Library Fire, 1,200 B.C., Preserved Clay Books

► EVIDENCE OF a fire in a library which not only did not destroy the books but actually helped to preserve them, was reported in Cincinnati by Dr. Carl W. Blegen, archaeologist of the University of Cincinnati.

The fire occurred in the palace of King Nestor in ancient Greece some 3,000 years ago. The books were records inscribed on clay tablets which were baked hard by the heat and flames. The inscriptions were the first known European writing, Dr. Blegen said, and were in a script which has not yet been deciphered.

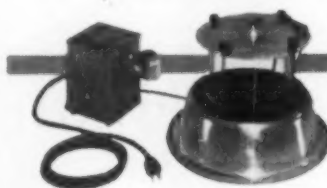
Other interesting finds at the site near Pylos, about 225 miles southwest of Athens, were signs of a balcony indicating a two-story construction in the luxurious palace, built seven centuries or more before Greece's classical "Golden Age." The palace also had fluted columns.

The palace was built of stone, crude brick, plaster and wood. It was probably stucco-faced, and possibly was decorated with paintings. The great hall, 36 by 42 feet, had a central hearth 13 feet across decorated in geometric patterns in at least three colors.

Dr. Blegen believes the palace may have been burned down by invading tribes from the north some years after the death of King Nestor. This king, known as "Smooth tongued Nestor," was one of the leaders in the Trojan War.

Science News Letter, November 22, 1952

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AGATIZED RAINBOWS: A Story of the Petrified Forest—Harold J. Brodrick—*Petrified Forest Museum Association and the Arizona State Highway Department*, 16 p., illus., paper, 25 cents. The brief text is profusely illustrated by gorgeous color photographs showing the jewel-like colors of the petrified wood and the rocks.

BRIDGING THE GAP—Edward R. Weidlein—*Mellon Institute*, 9 p., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa. One of the addresses at the installation of the section on Industrial Science of the AAAS.

CONCRETE ROADS—F. N. Sparkes and A. F. Smith—*Edward Arnold (Longmans, Green)* 492 p., illus., \$15.50. A book of British origin of interest to highway engineers.

A DOCUMENTARY HISTORY OF THE UNITED STATES—Richard D. Heffner—*New American Library*, 287 p., paper, 35 cents. The text of important historic documents from the Declaration of Independence to Gen. Marshall's description of the Marshall Plan, with commentary placing the documents in their historical context.

DRY BEANS, PEAS, LENTILS: Modern Cookery—Govt. Printing Office, USDA Leaflet No.

326, 24 p., paper, 10 cents. Welcome suggestions for menu bargains, budget-wise and nutrition-wise. Cooking time can be cut considerably by modern methods which retain full flavor, vitamins and minerals. (See p. 332.)

AN ESSAY ON METHOD—C. Hillis Kaiser—*Rutgers University Press*, 163 p., \$3.25. No longer, the author points out, are there horizontal dividing lines in our society between the uneducated and the cultured. Instead, the lines are vertical and separate those educated in one field from those of another. This work relates the methods of one discipline with those of others.

FACTS ABOUT EMPLOYMENT AND HEART DISEASE—Leonard J. Goldwater—*American Heart Association*, 10 p., illus., paper, free upon request to publisher, 44 East 23d St., New York 10, N. Y. A pamphlet in question-and-answer form intended to relieve the fear of the heart patient about his work.

THE FIRST HUNDRED YEARS OF THE MOUNT SINAI HOSPITAL OF NEW YORK, 1852-1952—Joseph Hirsh and Beka Doherty—*Random House*, 364 p., illus., \$5.00. The story of the development of a well known New York hospital, and also of the community it has served.

A GENERIC SYNOPSIS OF THE LIZARDS OF THE SUBFAMILY LYGOSOMINAE—M. B. Mittleman—*Smithsonian*, 35 p., paper, 50 cents.

THE HALL OF LIGHT: A Study of Early Chinese Kingship—William Edward Soothill, edited by Lady Hosie and G. F. Hudson—*Philosophical Library*, 289 p., illus., \$7.50. A study of the ancient Chinese institution known as the *Ming T'ang*, which translates as given in the title. The ceremony was linked with royalty and also with priesthood and with the calendar.

HARWELL: The British Atomic Energy Research Establishment 1946-1951—*Philosophical Library*, 128 p., illus., \$3.75. Describing research conducted and measures taken to protect health and safety. A bound edition of a book originally published in paper in July, 1952, by Her Majesty's Stationery Office.

HIGHWAY SUFFICIENCY RATINGS—O. L. Kipp, Chairman—*Highway Research Board*, Bulletin 53, 69 p., illus., paper, 90 cents. Papers presented at an annual meeting of HRB.

INDUSTRIAL SCIENCE, PRESENT AND FUTURE: A Collection of Papers Presented at the Installation of the Section on Industrial Science of the AAAS at the Philadelphia Meeting on December 28-30, 1951—Ruth C. Christman, Ed.—*AAAS*, 152 p., paper, \$2.00. One of the purposes of the new section is to further the application of science in industry.

IT'S YOUR HOSPITAL AND YOUR LIFE—Lucy Freeman—*Public Affairs Committee*, 32 p., illus., paper, 25 cents. The hospitals of the United States can house 1,500,000 patients at one time and can care for one-tenth of the population annually. This booklet tells something of how they work.

LEGAL GUIDE FOR CALIFORNIA PROSPECTORS AND MINERS—L. A. Norman, Jr.—*California*

Division of Mines, 78 p., paper, 25 cents. Information about how to locate and hold claims, restrictions with regard to water use and pollution, safety regulations, etc.

ORGANIC CHEMISTRY: The Chemistry of the Compounds of Carbon—Lucius Junius Desha—*McGraw-Hill*, 2d ed., 595 p., illus., \$6.50. A complete revision makes this, in effect, a new textbook. Intended for college students who do not intend to continue with the study of chemistry.

ORGANIC CHEMISTRY—E. E. Turner and Margaret M. Harris—*Longmans, Green*, 904 p., \$10.00. By authors at the University of London who describe the subject as a tourist guide would, giving the reader glimpses of chemical scenery of every sort which will encourage him to revisit the locality.

OTHER MINDS—John Wisdom—*Philosophical Library*, 259 p., \$4.75. Philosophical discussions on mind, consciousness, life and death reprinted from "Mind" and the "Proceedings of the Aristotelian Society."

PROCEEDINGS OF THE CONFERENCE ON COOLING OF AIRBORNE ELECTRONIC EQUIPMENT 1952—Walter Robinson, Conf. Chairman—*College of Engineering, Ohio State University*, 216 p., illus., paper, \$3.50. With greater flight speeds and demands for reduced equipment size, the problem of heat dissipation has become more serious.

RETURNING CARDIACS TO WORK: A Guide for Private Physicians Prepared for the Committee on Cardiac-in-Industry of the American Heart Association—Leonard J. Goldwater, Lewis H. Bronstein and Beatrice Kresky—*American Heart Association*, 20 p., paper, free upon request to publisher, 44 East 23d St., New York 10, N. Y. Telling the doctor how to evaluate physical capacity and select proper employment for his patient.

THE SHOVEL-NOSED SNAKE, CHIONACTIS, WITH DESCRIPTIONS OF TWO NEW SUBSPECIES—Lawrence M. Klauber—*San Diego Society of Natural History*, 56 p., illus., paper, 85 cents. Correction in name of publisher. Listed (see SNL, Oct. 18, p. 252) as from *Zoological Society of San Diego*.

A SURVEY OF THE LITERATURE OF DENTAL CARIES—Guttorm Toverud and others—*National Academy of Sciences, National Research Council*, 567 p., illus., \$3.00. The result of ten years' work of an NRC committee and their consultants to produce a critical review of the field.

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THESE HANDS ARE ABLE—F. E. Poole, Chairman—*American Heart Association*, 10 p., illus., paper, free upon request to publisher, 44 East 23d St., New York 10, N. Y. Studies show that workers with heart disease keep pace with unimpaired employees in work output. Intended to dissipate the misunderstanding of the work capacity of cardiacs.

VERDICT IN KOREA—Robert T. Oliver—*Bald Eagle Press*, 207 p., \$4.00. The author, on the faculty of Pennsylvania State College, gained his knowledge of Korea as counselor to President Rhee and to the Korean Commission in Washington.

THE WORLD OF ELI WHITNEY—Jeannette Mirsky and Allan Nevins—*Macmillan*, 346 p., illus., \$5.75. The story of the man who invented the cotton gin and was the father of mass production through his development of interchangeable parts for the musket.

YOU AND TUBERCULOSIS—James E. Perkins and Floyd M. Feldmann with Ruth Carson—*Knopf*, 176 p., \$2.50. Intended to supplement the physician's instruction so that the patient may be aided in giving necessary cooperation in his cure.

Science News Letter, November 22, 1952

MEDICINE

Electric Current in Chest Starts "Standstill" Heart

► A MACHINE that puts an electric current through the chest and heart may save lives threatened by heart "standstill," Dr. Paul M. Zoll of Harvard Medical School and Beth Israel Hospital, Boston, reports in the *New England Journal of Medicine* (Nov. 13).

One patient's heart was kept beating by this machine for five straight days. During a period of 52 hours the ventricular muscles of the heart did not make a single natural beat when the electric stimulator was turned off.

The machine, called a thyatron stimulator, is the size of a table radio and can be plugged into any ordinary alternating current electrical outlet. It converts the electricity into waves or impulses which can be varied in length, strength and timing.

Two hypodermic needles stuck into the chest, one on each side, carry the current through the heart.

Science News Letter, November 22, 1952

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BIOCHEMISTRY

Mental Patients Benefit

► GOOD RESULTS in treatment of some mental patients with a relaxing drug called Prenderol were reported by Dr. Lowell S. Selling of Orlando, Fla., at the meeting of the Southern Medical Association in Miami.

The patients were suffering from anxiety with tension. They complained of "feeling bad," they could not concentrate. Some had strange notions, such as those of the woman who thought people shunned her because of body odor, even though her doctors assured her she had none. Some were afraid to trust people. Some had a "general undecipherable fear."

The drug Dr. Selling used was made as a drug to relax muscles and to serve as an anti-convulsant. Chemically, it is related to mephanesin, and is 2,2-diethyl-1,3-propanediol. The manufacturer, E. R. Squibb and Sons, did not suggest any use for it in mental patients, but Dr. Selling thought if it were relaxing in organic conditions, it might relax patients whose tension came from disturbed emotions.

This has so far proved to be the case. Some patients get over their tension, and return to normal and stop taking the drug. Some are relaxed enough so that psychotherapy can help them. The drug is, Dr. Selling says, "as harmless as most medications with any degree of potency can be." Exceptional patients may be found who cannot tolerate it.

Drawbacks to the drug are that the tablet is "large and ungainly," difficult to swallow

and has a somewhat unpleasant taste. A 200-pound man may have to take eight tablets after each meal to get enough. It causes drowsiness, which is helpful for patients who have had trouble sleeping, but a drawback for the first day or two since it may limit the patient's activity. It is not habit-forming. However, Dr. Selling feels it should only be used by a psychiatrist until more research can be done on it.

Science News Letter, November 22, 1952

INVENTION

Sorter Separates Radioactive Ores

► RADIOACTIVE ORES are separated according to their degree of radioactivity with an apparatus invented by Christian M. Lapointe, Port Radium, Canada. The patent, number 2,617,526, is assigned to Eldorado Mining and Refining, Ltd., Ottawa.

The ore is fed past a Geiger counter. The impulses of radioactivity are translated into electrical energy to activate the sorting mechanism.

Science News Letter, November 22, 1952

Questions

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GENERAL SCIENCE—What is Nobel's new view of the world? p. 324.

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❁ **MIDGET REFRIGERATOR** for small apartments, offices, baby nursery and summer cottages occupies only two square feet of floor space. Available in a walnut, white or ivory finish, the refrigerator has a one-cubic-foot capacity plus a dry-storage compartment near its quiet-running motor. It will make 21 ice cubes at once.

Science News Letter, November 22, 1952

❁ **ORCHESTRAL TAPE** recordings soon are to be introduced commercially, featuring noted conductors and soloists. To be played back at 7.5 inches per second, the tapes will be divided into two tracks, each giving high-fidelity reproduction of musical tones of 50 to 15,000 cycles.

Science News Letter, November 22, 1952

❁ **AIR VENTS**, especially good in areas frequently swept by hurricanes, feature snap-on covers that prevent wind-blown rain from getting into attics through the ventilators during heavy storms. Made of rugged aluminum, the vents can be installed in old houses as well as in houses now under construction.

Science News Letter, November 22, 1952

❁ **ELECTRONIC INSTRUMENT** for machinery maintenance men uses a long metal prod as a microphone, as shown in the photograph. Trouble-shooters touch the prod to bearings, pistons and gears and



listen for tell-tale friction squeaks in the earphones. The sensitive device helps maintenance men find the spot quickly where a machine needs attention.

Science News Letter, November 22, 1952

❁ **TRAFFIC-LIGHT spotter** for automobiles is made of a clear plastic molded into a rainbow shape. Acting as a lens, the device is attached to the windshield molding of a car. It reflects the image of the traffic light to the driver, even when a sun visor blocks his view directly.

Science News Letter, November 22, 1952

❁ **ADJUSTABLE GOVERNOR** for autos lets Dad set the speed Junior cannot exceed while using the family car. Using a key which he keeps, the parent unlocks a dial on the dashboard and makes the speed setting. The adjustment cannot be changed without the key that unlocks the controls.

Science News Letter, November 22, 1952

❁ **WIDE-ANGLE LENS** for aerial cameras has been developed for the Air Force. Practically distortion-free, the lens covers more than a 90-degree field and produces much finer image detail than previous wide-angle lenses.

Science News Letter, November 22, 1952

❁ **COASTER-HANDLE** arrangement clamps on 8- to 11-ounce small-bottomed glasses or beverage cans, converting them into mugs. The coasters protect furniture from moisture that may condense on the cans. Persons can use the bright-colored handles to tell which drink is theirs.

Science News Letter, November 22, 1952

• Nature Ramblings •

➤ **FAT** IS a good index to the general physical condition of deer in the winter. The less fat you find on a deer killed during the winter, the nearer the animal is to starvation.

It is the normal thing for deer to go on short rations a part of the winter, if the season is at all severe; and if it is uncommonly severe, the poor things may be driven to such unpalatable food as pine bark and juniper twigs.

Deer come to the beginning of winter with considerable reserves of fat, stored in various parts of their bodies during their long summer of browsing. The carcass of a deer shot in autumn will have a layer of fat under almost all parts of its skin, with thicker masses on hips, saddle and elsewhere.

There will be a great deal of fat around the internal organs, even a spot of fat on

Fat Measures Health



the heart. The marrow in the long bones will be white with fat.

As the summer browse-plants are banished by the onset of winter, the deer turns to less appetizing and less nourishing foods. These may fill the stomach, but they make

no fat, and the animal begins to use up its reserves.

First to go are the outside layers and masses of fat—the deer loses its late-summer roundness, becomes more angular in outline.

Later in winter, especially if the snows are deep and even winter browse is hard to get at, the hunger-pinch becomes more severe and the internal reserves are drawn upon.

The carcass of a winter-killed deer will show very little visceral fat; and if the fat spot on the heart is gone, it is a pretty sure sign that the animal was really starving.

Indication of extreme distress is the disappearance of fat from the bone marrow. Deer in the final stages of malnutrition will have nothing in the long-bone cavities but a kind of red jelly.

Science News Letter, November 22, 1952